WHAT IS CLAIMED IS:

1. An encryption processing apparatus for performing a data encryption process, said encryption processing apparatus comprising:

a control section for setting a mixed encryption processing sequence by dividing an original encryption processing sequence into a plurality of groups composed of one or more encryption processing units and by mixing processing sequences of encryption processing units under the condition in which the processing sequence of the encryption processing units within each set group is fixed; and

an encryption processing section for performing an encryption process in accordance with the mixed encryption processing sequence set by said control section.

2. An encryption processing apparatus according to Claim 1, wherein said control section sets a dummy encryption processing unit for performing a dummy encryption process unnecessary for said original encryption processing sequence in at least one of said groups of divisions, and sets one mixed encryption processing sequence by mixing the encryption processing units of a plurality of groups containing the dummy encryption processing unit.

3. An encryption processing apparatus according to Claim 1, wherein said control section determines a group of sequences, which can be performed independently of each other, within the original encryption processing sequence to be divided in a process of division into a plurality of groups composed of one or more encryption processing units, and performs a process for setting a group of divisions in which the sequence which can be performed independently is a unit.

4. An encryption processing apparatus according to Claim 1, wherein said encryption processing unit is a single-DES encryption process, and

wherein said control section sets one mixed encryption processing sequence by dividing the original encryption processing sequence containing one or more single-DES encryption processes into a plurality of groups composed of one or more single-DES encryption processes and by mixing the single-DES encryption processing units contained in each group of divisions by mutual replacement of the single-DES encryption processing unit of each set group under the condition in which the processing sequence within each set group is fixed.

5. An encryption processing apparatus according to Claim 1, wherein the original encryption processing sequence to be mixed is an encryption processing sequence including a triple-DES encryption process, and

said control section performs a process for dividing the encryption processing sequence into a plurality of groups composed of one or more encryption processing units by using the single-DES encryption process which forms the triple-DES encryption process as an encryption processing unit.

6. An encryption processing apparatus according to Claim 1, wherein the original encryption processing sequence to be mixed is an encryption processing sequence including a triple-DES encryption process and a random-number generation process, and

said control section forms a random-number generation process as a process including a conversion process by three single-DES processes, and sets the triple-DES encryption process as a random-number generation process in one of the groups of divisions.

7. An encryption processing apparatus according to Claim 1, wherein the original encryption processing sequence to be mixed is an encryption processing sequence including a

triple-DES encryption process, and

said control section performs a process for dividing the encryption processing sequence into a plurality of groups composed of one or more encryption processing units by using the single-DES encryption process which forms the triple-DES encryption process as an encryption processing unit, sets a dummy single-DES process as a dummy encryption process unnecessary for the original encryption processing sequence in at least one of said groups of divisions, and sets the number of single-DES processes of dummies to be set to a multiple of 3 corresponding to the triple DES.

8. An encryption processing apparatus according to Claim 1, wherein said encryption processing apparatus has a memory for storing processing results of the encryption processing units which form the mixed encryption processing sequence set by said control section, and

said control section stores the processing results in said memory in such a manner as to be capable of identifying which encryption processing unit the processing results are obtained from.

9. An encryption processing apparatus for performing a data encryption process, said encryption processing apparatus comprising:

a control section for setting a mixed encryption processing sequence by dividing the original encryption processing sequence into one or more encryption processing units, by adding a dummy encryption processing unit for performing a process corresponding to said encryption processing unit, and by performing a mixing of processing sequences of the original encryption processing units included in the original encryption processing sequence and said dummy encryption processing units; and

an encryption processing section for performing an encryption process in accordance with the mixed encryption processing sequence set by said control section.

10. An encryption processing apparatus according to Claim 9, wherein the encryption processing unit contained in said original encryption processing sequence is a single-DES encryption process, and

said control section sets said dummy encryption processing unit as a single-DES encryption process.

11. An encryption processing method for performing a data encryption process, said encryption processing method comprising:

a division step of dividing an original encryption processing sequence into a plurality of groups composed of one or more encryption processing units;

a mixed encryption processing sequence setting step of setting a mixed encryption processing sequence by mixing processing sequences of encryption processing units under the condition in which the processing sequence of the encryption processing units, set in said division step, within each group is fixed; and

an encryption processing step of performing an encryption process in accordance with the mixed encryption processing sequence set in said mixed encryption processing sequence setting step.

12. An encryption processing method according to Claim 11, further comprising the step of setting a dummy encryption processing unit for performing a dummy encryption process unnecessary for said original encryption processing sequence in at least one of said groups of divisions, and

said mixed encryption processing sequence setting step sets one mixed encryption processing sequence by mixing the encryption processing units of a plurality of groups containing said dummy encryption processing units.

13. An encryption processing method according to Claim 11, wherein said division step determines a group of sequences, which can be performed independently of each

other, within the original encryption processing sequence to be divided in a process of division into a plurality of groups composed of one or more encryption processing units, and performs a process for setting a group of divisions in which the sequence which can be performed independently is a unit.

14. An encryption processing method according to Claim 11, wherein said encryption processing unit is a single-DES encryption process,

said division step divides the original encryption processing sequence containing one or more single-DES encryption processes into a plurality of groups composed of one or more single-DES encryption processes, and

said mixed encryption processing sequence setting step sets one mixed encryption processing sequence by mixing the single-DES encryption processing units contained in each group of divisions by mutual replacement of the single-DES encryption processing units of each set group under the condition in which the processing sequence within each set group is fixed.

15. An encryption processing method according to Claim 11, wherein the original encryption processing sequence to be mixed is an encryption processing sequence including a

triple-DES encryption process, and

said division step performs a process for dividing the encryption processing sequence into a plurality of groups composed of one or more encryption processing units with the single-DES encryption process which forms the triple-DES encryption process being an encryption processing unit.

16. An encryption processing method according to Claim 11, wherein the original encryption processing sequence to be mixed is an encryption processing sequence including a triple-DES encryption process and a random-number generation process, and

said encryption processing method further comprises the steps of forming a random-number generation process as a process including a conversion process by three single-DES processes and setting the triple-DES encryption process as a random-number generation process in one of the groups of divisions.

17. An encryption processing method according to Claim 11, wherein the original encryption processing sequence to be mixed is an encryption processing sequence including a triple-DES encryption process,

said division step divides the encryption processing sequence into a plurality of groups composed of one or more encryption processing units by using the single-DES encryption process which forms the triple-DES encryption process as an encryption processing unit, and

said mixed encryption processing sequence setting step includes a process for setting a dummy single-DES process as a dummy encryption process unnecessary for the original encryption processing sequence in at least one of said groups of divisions, and for setting the number of single-DES processes of dummies to be set to a multiple of 3 corresponding to the triple DES.

18. An encryption processing method according to Claim 11, wherein said encryption processing step includes a step of storing processing results in a memory for storing processing results of the encryption processing units which form the mixed encryption processing sequence in such a manner as to be capable of identifying which encryption processing unit the processing results are obtained from.

19. An encryption processing method for performing a data encryption process, said encryption processing method comprising:

a division step of dividing an original encryption processing sequence into one or more encryption processing units;

a mixed encryption processing sequence setting step of setting a mixed encryption processing sequence by adding a dummy encryption processing unit for performing a process corresponding to said encryption processing unit and by mixing processing sequences of the original encryption processing units included in the original encryption processing sequence and said dummy encryption processing units; and

an encryption processing step of performing an encryption process in accordance with said mixed encryption processing sequence.

20. An encryption processing method according to Claim 19, wherein the encryption processing unit contained in said original encryption processing sequence is a single-DES encryption process, and

said mixed encryption processing sequence setting step sets said dummy encryption processing unit as a single-DES encryption process.

21. A computer program written to perform encryption processing on a computer system, said computer program comprising:

a division step of dividing an original encryption processing sequence into a plurality of groups composed of one or more encryption processing units;

a mixed encryption processing sequence setting step of setting a mixed encryption processing sequence by mixing processing sequences of encryption processing units under the condition in which the processing sequence of the encryption processing units, set in said division step, within each group is fixed; and

an encryption processing step of performing an encryption process in accordance with the mixed encryption processing sequence set in said mixed encryption processing sequence setting step.

22. A computer program written to perform encryption processing on a computer system, said computer program comprising:

a division step of dividing an original encryption processing sequence into one or more encryption processing units;

a mixed encryption processing sequence setting step of setting a mixed encryption processing sequence by adding a dummy encryption processing unit for performing a process corresponding to said encryption processing unit and by mixing processing sequences of the original encryption processing units included in the original encryption processing sequence and said dummy encryption processing units; and

an encryption processing step of performing an encryption process in accordance with the mixed encryption processing sequence.